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ABSTRACT

A study investigated communication patterns among undergraduate student groups using email for instructional discussion at the University of Minnesota. A sample of three 6-person groups was studied over a 7-week period, during which the groups were given three topics to discuss sequentially for instructional purposes. Students used email outside of class time and were required to contribute at least two posts (or entries) for each discussion topic. The task assigned to the students was to: (1) generate ideas and arguments on a given topic; and (2) learn how to improve their on-line conversation skills. There was no tangible goal for the group to produce; instead, groups were asked to focus on the process of discussing. Transcripts of the discussions were analyzed inductively using a process of repeated summarizing to reduce the data and look at patterns. Each discussion was treated as a separate case and dynamics were noted at the micro-level for all cases. Then cross-group dynamics and cross-discussion dynamics were analyzed. Finally, categories were generated for further research: (1) discussion momentum (the use of an "anchor" post as a touchstone); (2) question-asking strategies; (3) use of humor or sarcasm; (4) norms for naming participants; (5) style of writing and competence; (6) beginnings and endings; (7) disruptive events; (8) software differences; (9) role functions (for instance, the emergence of a leader); (10) agreement and conflict; (11) nonparticipants; and (12) the relationship between computer-mediated and face-to-face interaction. (Contains instructions for email discussion used in the course.) (TB)

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***** WORK IN PROGRESS *****

"Computer-based Communication and the Creation of Group Identity" OR "Questions We Could Be Asking About Group Interaction Via Computer"

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Presented at the Annual Meeting of the Speech Communication Association in New Orleans, November 20, 1994.

ABSTRACT: This paper describes an exploratory study of undergraduate student groups using email for instructional discussion. The purpose of the study is to generate research questions and provide direction for a larger research program. A sample of three 6-person groups was studied over a 7-week period during which the groups were given three topics to discuss sequentially for instructional purposes. Students used email outside of class time and were required to contribute at least two posts for each discussion topic. The assigned "task" was to (1) generate ideas and arguments on the given topic and (2) learn how to improve your on-line conversation skills. There was no tangible goal for the group to produce, instead groups were asked to focus on the process of discussing. Participation in the discussion constituted 10% of the students' overall grade. Transcripts of the discussions were analyzed inductively using a process of repeated summarizing to reduce the data and look at patterns. Each discussion was treated as a separate case and dynamics were noted at the micro-level for all nine cases. Then cross-group dynamics and cross-discussion dynamics were analyzed. Twelve categories of dynamics were inductively generated from the data as areas for future research. Strengths of the study include the ability to manage micro-level communication dynamics in the transcripts, as well as consider longitudinal effects. The exploratory nature of the study limits the reliability and generalizeability of the specific findings.

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This paper is part of an on-going project studying small group discussions over email. The purpose of this analysis is to develop a series of research questions to be tested by subsequent studies. As a previous study in this research program has noted (Owen-Cruise, Jackson, & Brown, 1994), we have no reason to assume that interaction behaviors which are effective in a face-to-face classroom discussion are equally effective in a computer-based communication context. Furthermore, it is unclear what new barriers the use of computer technology introduces into communication interactions. This analysis inductively generates a typology of the communication dynamics of peer discussion groups using email technology.

Owen-Cruise, Jackson, & Brown (1994) analyzed an earlier sample of peer discussion groups using the same collection method as the present study. Their content analysis indicated that 75% of the dialogue was open-ended with extended potential for continuing interaction, while the remaining 25% were closed moves to resolution with limited potential for continuing interaction. What is interesting about this statistic is the absence of any open-ended communication with limited potential and moves to resolution which are extended in potential. While this may seem intuitive, their content analysis of a dyadic, student-teacher sample found a small percentage in each of these latter categories. The second sample also found emphasis on limited potential moves-to-resolution which might be expected in student-teacher interaction. The importance of the Owen-Cruise et al. study is its ability to show the differences in communication dynamics between different types of computer-mediated communication. The difficulty is that within a single type, it provides very little direction or interpretation. This study is a qualitative look at the communication within a peer discussion situation of computer-mediated communication.

Kuehn (1994) suggests three avenues for research in instructional computer-mediated communication. First, he proposes that the adaptations which people make in order to use the medium to develop working relationships warrants our attention. Second, longitudinal studies need to study media adaptation over time, since the effects of the learning curve and relationship development appear to have a strong effect. Third, Kuehn cites the need to chart a typology of behaviors and strategies which are competent in computer-mediated communication interactions. Further, we need to determine which behaviors contribute to successful task and group outcomes. Kuehn's review of the literature and call for more

communication-oriented research in instructional computer-mediated communication demonstrate the need for exploratory, qualitative research such as this study. The findings of this study directly related to Kuehn's directions for the field and it is hoped that the research this study generates will improve our knowledge about this important technological innovation.

DATA COLLECTION

Data was collected from an undergraduate intercultural communication course at the University of Minnesota. The class was composed of 19 students with one faculty member and students were divided into three discussion groups for the duration of the quarter (10 weeks). Email was introduced in week 3 at a 1 hour, hands-on workshop during class time where the predominant email software, PINE[1] was explained by the instructor with handouts provided. Students then conducted graded discussions (sequentially) with the instructor as a silent listener.

Three discussion topics were provided by the instructor in the syllabus (see Appendix A) with specified start and end dates. The first discussion was 3 weeks in duration, while the second and third were each 2 weeks in duration. Students were given group grades unless particular individuals did not participate. Grades were based on ability of the group to use the medium for interactive group discussion (as opposed to nominal group idea generation) and on the ability of the group to creatively address the topic. Points accrued in the email assignments represented 10% of the student's overall grade. Students were expected to contribute a minimum of two posts to their group's discussion during each discussion period. At the end of each discussion period, class time was set aside to discuss the communication competence of the groups, and the ideas generated by the discussion.

Activities in class during the discussions were related to the email topics, but were not identical. It should be noted that extensive face-to-face group activities in random groupings were conducted throughout the course, and students became cohesive as a class by the end of the course. After the final discussion, evaluation questionnaires on the email

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[1]Pine Mailer is a product of the University of Washington, Seattle. Copyright 1989, 1990, 1991, 1992 University of Washington.

experience were filled out by students which remained sealed until after the instructor submitted grades to the registrar. Although students could choose not to participate in the assignment by undertaking extra credit projects, the nature of the interaction was not self-motivated. Kuehn (1994) suggests that the results from non-voluntary computer-mediated communication should be interpreted with caution in light of uses and gratification research.

The purpose of the assignment was five-fold. First, it extended the amount of time available to the instructor for student discussion without requiring students to coordinate busy schedules. Second, it gave students easy access to the instructor and to one another should there be questions on course material, without requiring disclosure of telephone numbers which can be uncomfortable and risky. Third, it encouraged students who are normally quiet in a classroom discussion to participate and gave students who needed time to formulate answers an optimal opportunity for discussion. Fourth, the case study example of communication using a foreign medium was analyzed in class for similarities to intercultural communication scenarios. Fifth, the instructor felt the skill of communication through email was a worthwhile skill to impart to students given current trends in technology. The instructor felt that in this instance, the assignment was successful in achieving these goals, and questionnaires distributed at the end of the course indicated that students evaluated the experience positively.

Messages were collected electronically during the quarter and compiled into ordered paper texts for analysis, keeping the original form of each message intact. The investigator then attempted to summarize the dynamics of each case, treating each discussion topic as a separate discussion. Thus the data are divided into 9 case studies of discussions: 3 topics by 3 groups. This allows a micro analysis of topic and thread development, as well as a longitudinal analysis of group development over the 7 week period. As dynamics were identified in individual discussion cases, the other cases were analyzed for similar dynamics. Once summarization of the cases was complete, the results were grouped into larger categories for hypothesis development. The exploratory nature of this study provides the impetus for an interpretive, inductive approach which is not intended to be generalizable, nor have the interpretations been subjected to rigorous standards of reliability and validity. Instead, the data has been analyzed with respect to a larger research program in hopes of

developing hypotheses and methods for measurement which can be applied to future samples of peer discussion data.

RESULTS

In the following section, I describe the dynamics of each of the three discussion topics, and then the development of each of the three groups. The diversity of experience between the groups, and the differences between discussion topics encapsulates a broad spectrum of strategies.

Discussion one asked students to consider what values electronic video games taught children who played them and why they thought these values might be appealing in other cultures where the machines are popular. Students were generally emotionally engaged by the topic, had strong opinions and a high level of interest. A few students professed not to play or know anything about video games which impeded their participation in the discussion. The topic tended to revolve around the issue of whether video games taught children to be violent with strong opinions rising on both sides of the issue. A lack of knowledge of other cultures' use of video games restricted the discussion to U.S. norms. Although the discussion lasted three weeks, the high learning curve and technology problems resulted in procrastination and a lower number of messages overall in this topic. There tended to be a lot of summarizing of the discussion during this topic, which was also present in the second, but not the third topic. A problem which surfaced frequently in this initial topic was that if individuals posted messages and found no responses when they returned to check their mail it was disruptive to the conversation.

Discussion two revolved around current events such as Bosnia, Northern Ireland, and Russia and asked students if they could identify cultural reasons why these events occurred (as opposed to economic, political, or other reasons). Students' general unfamiliarity with current events resulted in a lower level of engagement in this topic, although in two of the three groups it allowed knowledgeable students to teach the others what they knew about current events. Many of the dynamics which began in discussion one remained prominent in discussion two such as functional role behavior, humor and sarcasm, and identifying other students by name.

Topic three generated the largest number of messages which appears to be a result of the learning curve for the technology, although the choice of topic may be a confounding factor. In discussion three students were asked to account for the ethical issues of travelling abroad and spreading cultural 'contamination' across the globe. Students had generally never struggled with this issue and were clearly engaged in justifying their own desire to travel with the problems inherent in intercultural contact. There was a high level of disagreement within the groups which the groups resolved differently. While more topics were considered by groups in this discussion, there was also a lack of integration of ideas in this topic, resulting in the lack of a bigger picture and no summarizing. The cause of this could be the wording of the question on the syllabus was longer and more complex. It could also be that given end-of-the-quarter stress, groups functioned less effectively. It could also be that summarizing behavior emerges more at the beginning of group relationships/learning of email than at the end.

Group one consisted of six students (2 men, 4 women) after two students dropped the course in the third week. This group had the largest cultural diversity with 30% of the group having first generation Asian-American backgrounds. This group had a great deal of difficulty getting started and maintaining momentum. Technical difficulties for this group were particularly high in the first discussion with one student having problems well into the 8th week of class, and another student participating very marginally throughout the quarter. After a slow start, this group developed a norm of directing comments to a named person, rather than generally to the group. This appeared to be a strategy for maximizing the possibility that a post would be answered. By the second discussion, one member had emerged as a clear leader-figure coaching and cajoling other members to participate and contribute posts. In the third discussion, an active role taken by other members allowed the leader to take a less directive role and it is possible that over time his role as leader would have ended. Posts in this group tended to have a short attention span, in that each post answered the post before it without reference to other posts in the sequence. Use of questions by group members was moderate to begin with and was reduced considerably by the third discussion.

Group two consisted of eight students (3 men, 5 women) and was the most cohesive and most prolific group. The socioemotional level of involvement appeared to be quite high in this group and the group engaged in a touching closure discussion bidding one another goodbye online. In the initial discussion of this group, two members emerged as consistent summarizers integrating the ideas of all members and pushing the group forward, while other members emerged as feedback-givers and responders. This continued during the second discussion, but in the third discussion these functions were carried out by other individuals. This group had significant problems in the second discussion when the weather turned nice and the group had trouble staying on task. One member of this group emerged as a clown, poking fun at his own contributions. This member was able to use this technique to ask provocative questions which might otherwise have threatened the group. The technology problems that occurred in this group were significant but confined to a few members so they did not impede the overall discussion of the group.

Group three consisted of six students (3 men, 3 women) and had considerably less technological difficulties than the first group. Although group three was more homogenous with regards to ethnicity and age, political leanings within the group ranged from liberal to conservative. This group began the first discussion with a strong emotional opinion that very few members shared. The group handled the conflict by disagreeing with the content, but not directly disagreeing with the individual by name. When it became apparent that a majority of the group disagreed, there was a concession directed at the individual to support the emotional reaction, but not the underlying opinion. For reasons external to the course, the individual stopped participating until the third discussion. The duration of the discussion was marked by an inability to diversify the topics in the discussion and by constant verbalization that everyone was in agreement, although they actually did differ in opinion. Discussion in this group tended to be task oriented at all times, and no personal information was responded to by the group. This group also engaged in a lot of summarizing behavior.

The following table summarizes the data taken from the nine cases:

	Group 1 (n=6)	Group 2 (n=8)	Group 3 (n=6)
Discussion 1			
# messages	[illegible]	21	12
# class time	[illegible]	11	4
# at night	3	3	5
Questions	1,2,3,4,5	1,2,3,4,5	1,2,3,4,5
Discussion 2			
# messages	15	18	13
# class time	7	5	3
# at night	3	7	4
Questions	1,2,5 (low)	1,2,3,5	1,2,3,4,5,7
Discussion 3			
# messages	18	30	18
# class time	5	8	5
# at night	7	9	7
Questions	1,2,5,6 (rare)	1,2,3,4,6	1,2,3,4,5,8,9

KEY:

messages: Total number of messages received from group

class time: Number of messages initiated within 1 hour before or after class

at night: Number of messages initiated outside of normal school hours (8 a.m. to 6 p.m. Mon-Fri)

Questions: Use of questions for (1) feedback, (2) answer their own question, (3) seek clarification, (4) rhetorical question, (5) introduce new topic, (6) restate topic, (7) teasing, (8) challenge someone's idea (9) interjection (eg. OK?).

DISCUSSION

Group discussion differs from dyadic discussion over email because it requires a meta-level of organizational skills that the dyad can ignore. When a dyad are conversing, each turn taken by the individual is directly related to the most recent turn similar to the game of tennis. Sakamoto (1982) suggests that U.S. Americans use rules similar to tennis when discussing in face-to-face groups as well. Japanese discussion patterns, according to Sakamoto, are more likened to bowling with each person saying their piece and the pieces not necessarily related to one another. Email group discussion is a hybrid of these two patterns. While there is a (U.S. American) expectation that individuals will stay on topic, the possibility for simultaneous discussion of multiple topics is possible. A member of an

email group must keep track not only of multiple topics of conversation, but there is an opportunity to respond to more than one speaker and a need to have a big picture of the overall interaction, which is less necessary with a dyad. Email facilitates this bigger picture by saving and organizing the messages which have been received. This study explores the mechanisms or strategies which members use to engage in group discussion over email. Interpretive analysis of the text of these computer-mediated group discussions suggests twelve areas for future research to explore. These areas can be grouped into two broader categories of (1) communication strategies and (2) relational strategies used by the group. In the following section I describe in greater detail avenues of research for each of these areas:

A. Communication Strategies

1. Discussion momentum: Use of an "anchor" post

In all nine cases for this study, some posts were able to generate more responses and discussion than others. For example, group 1 discussion 2 was characterized by a "short attention span" or a lack of "anchor" posts. In this discussion each post was primarily a response to the post immediately preceding it with very little integration from other posts or evidence of a broader understanding of the flow of conversation. In contrast, group 3's discussions were characterized by a large number of "anchor" posts with chaining development. The defining characteristics of a competent "anchor" post need to be studied in greater detail, but from this data set, it would appear that an anchor post lays out a thoughtful argument with some substance, which is then responded to and may be built on by other members of the group. The "success" of an anchor post might be the number of references it receives in subsequent messages. In group 3 discussion 1, several posts had a high potential for "anchor" status, but they appeared too late in the conversation for building to occur. It would seem therefore, that in addition to competent characteristics of the post itself, elements of timing, and interest level of the topic play a role. The differences between group interaction (multiple answers to the same post) and dyadic interaction within a group (back and forth responses with no more than two people engaged at one time) should also be studied to see how groups can effectively use the on-line environment.

2. Question-asking strategies

A primary use of questions is to solicit feedback, and the asynchronous nature of computer-mediated communication requires that feedback be delayed. In this study, questions and statements asked over email were frequently not acknowledged or responded to by other group members. There was some evidence that the lack of response discouraged members from using question strategies, particularly in group one. On the other hand, the low response rate for questions makes the incidence of question-asking an interesting occurrence for the researcher. How do discussants use questions to promote the conversation?

In this study nine uses of questions were identified, using question marks as the sole criterion. Other more subtle question-types may exist as well, but not marked with punctuation. Discussants most frequently used questions for feedback ("What do you guys think?"), to structure their own text (ie. ask a question and answer it yourself), and to introduce a new topic to which they were soliciting other's answers. Other uses of questions include clarification ("Was this what you meant?"), rhetorical questions (questions which further the argument of the text, not intended to be answered), re-statements of the topic under discussion, teasing, to challenge others ("What is the purpose of that?"), and an occasional interjection not really intended as a question ("OK?"). Questions are often the key to the dynamic part of interaction between two people and so their use and effectiveness in email would be an important area for study.

3. Use of humor and sarcasm

Several studies have commented that the lack of socioemotional cues in computer-mediated communication make it a less rich form of interaction (see Walther, 1994). Use of humor and sarcasm over email should therefore be an interesting area to study since authors must overcome their reliance on non-textual cues to indicate the statement is not to be taken seriously. Two instances of humor usage occurred in this study and in both cases, the use of humor or sarcasm was related to conflict management. In group two one member opted to become the group clown and directed sarcastic and humorous comments at himself. Group members adopted a norm of not taking the clown seriously, which allowed the clown to stir

up provocative questions for the group to consider without threatening the cohesiveness of the group.

In group three, sarcasm was less productive. One member used a sarcastic writing style in most of her posts, intended to make her point in a "witty" fashion. The political diversity in group two erupted in the third discussion when one member posted a highly conservative anchor piece in order to stir up the discussion. A conservative member of the group responded positively to the post, after which the "witty" member used sarcasm to reprimand both members for airing such un-politically correct views where they may hurt other's feelings. The nature of the two conservative posts make it difficult to know if the authors also intended to use sarcasm, although the authors later defend their opinions expressed in those posts. The result of the conflict was that liberal members opted not to discuss the matter because of the difference in opinion, while conservative members and members with undisclosed affiliations expressed regret that dialogue was not possible.

These two examples indicate how the use of humor over email, both self-directed and other-directed, may be related to conflict management within a group, and help a group accomplish their task.

4. Norms for naming members of the group

The cryptic nature of member's email addresses, and the lack of eye-contact cues to direct messages make the use of names in an email discussion an interesting area for exploration. In group one, group members had a hard time eliciting responses from other members. There was a feeling that they were posting messages into a black hole and no-one was receiving them. In order to elicit responses, members of group three began directing communication specifically to a named member of the group (while posting the message to all members) to try and encourage that member to answer. In groups two and three, naming seemed to make the group more cohesive and personal. There was evidence both in group one and two, that the cryptic nature of email addresses meant some members did not know with whom they were conversing. There was also some evidence that use of PINE software contributed to an inability to remember who had said what. The awkwardness of moving between compose and view portions of the software make it time consuming to go back and find out who said what. This seemed to inhibit use of names by some members. It would

be interesting to test whether the use of personal names in email posts was important in the development of cohesiveness between students, or at least was a cue that such relationships were developing.

5. Style of writing and competence

Barnes and Greller (1994) have indicated that in the absence of relational cues, the written word becomes the focus of attention in computer-mediated communication. This focus requires the author to spend more time clearly articulating their thoughts. Students in this study indicated they appreciated the opportunity to have time to formulate their ideas in the process of email. Examination of the texts indicates a high use of full paragraphs and sequential idea development. There were however, several students who used a more stream-of-consciousness style of writing. These posts were more difficult for the researcher to read and appeared to have fewer responses than more organized posts. A similar technique to stream-of-consciousness is the brief post -- one or two sentences in direct response to a previously asked question. This type of message does not generate future posts, or if it does the interaction has a stream-of-consciousness quality about it. Future research could explore the impact of stream-of-consciousness writing and small posts to see what role they play in structuring the interaction. It is possible that they are more useful for socioemotional functions than argumentation, also the short post could be a form of "voting" which may be a mechanism to move the group forward.

6. Beginnings and endings

An interesting phenomenon was noticed in the data for this study. A significant number of students felt a need to preface their post with social niceties, or some type of socioemotional acknowledgement. Similarly, the parting sentences of a post, or the signature of the author tended to be less task-oriented. On the other hand a number of students posted only task-related text without preface or concluding remarks, often without a signature. Are the socioemotional dynamics of group development met by task-directed email discussion groups? Evaluations at the end of the quarter indicated that students felt they had "gotten to know each other" better than they might have with merely classroom interaction. Is there a difference between groups that engage in more socioemotional contexting of dialogue than

others? In the longitudinal perspective, group two engaged in a touching closure discussion at the end of the ten weeks where a number of students expressed regret that the quarter had ended, that they had enjoyed the interaction, and wished the others in the group "a good life." This did not occur in the other two groups to the same extent. Group three did engage in a closure discussion which revolved around the conservative-liberal conflict rather than around their relational development. Group one had difficulty sustaining interaction and group cohesiveness so there was no evidence that the group was aware it had stopped being a group in its internal dialogue. The concentration of socioemotional interaction in certain parts of the discussion, such as beginnings and closings, may indicate the role that it plays in the group and its relationship to competence.

7. Disruptive events

In the data for this study, it was apparent that certain types of events disrupted the flow of interaction in the group. Lack of response in group three was a disruptive problem. One member of the group posted and two days later when she logged on there were no responses. Her response post did not anchor the conversation and so the group engaged in summarizing activity for the remainder of the discussion. An interesting disruption occurred in group two when the weather became unexpectedly balmy in February. Members of group two seemed unable to form coherent arguments while the weather remained nice and posts during this week consisted of happy meandering thoughts about the weather. There did not seem to be a disruptive problem, however, when group members began posting unrelated chain letters to one another. Perhaps an even more interesting question for future research is how groups handle the disruption which is ineffective. A disruption which is poorly handled is easy to spot in the data set. On the other hand, potential disruptions (well handled by the group) are speculative at best. A typology of disruptive events might help researchers isolate well handled disruptions for comparison with poorly handled ones.

8. Software differences

This study did not collect information on the software interface which students used to access their email account. Comments by students about posts that "seem long" are common in the data set. One group began a fantasy theme comparing a long post to Alex Haley's novel, Roots. Other students apologize when they perceive that they have written too long of

a post. A question worth testing is whether the software interface contributes to the length of posts. Also, some software may make it easier for users to save a message and edit it later before posting, so the ability for some students to create anchor messages may be increased by the software package. A related problem with the software has already been raised with regards to the ease of looking back and finding out who has said what. It would seem a worthwhile covariate to explore how the software interface contributes to students ability to work with the medium.

B. Relational strategies

1. Role functions

Face to face small group studies indicate that role emergence occurs relatively quickly in a zero-history group (see Bormann, 1990). In particular, the emergence of a leader is a predominant theme in the literature. McComb (1994) suggests that computer-mediated communication equalizes status differences between participants, which would seem to be an impediment to leadership emergence. The evolution of roles in the groups of this study support a more ephemeral conception of leadership. In only one group did a clear leader emerge during the 8 week discussion period. Group one's leader had established himself by the second discussion as the only person who was earnest in carrying on the discussion. His role was primarily to goad the others into contributing, and providing feedback for each contributor in the absence of greater participation. In fact, this example of leadership emergence appears to be dysfunctional rather than a positive development. By the third discussion, however, the leader's role diminished because other individuals took the initiative and actively participated in the discussion.

A similar occurrence happened in group two where a pattern of role functions emerged during the first and second discussions. Certain members consistently undertook an integrative function for the group to summarize and move the group onwards, while other members consistently provided feedback and built on the integration ideas. In discussion three, this function-system broke down as other members took the initiative early on to supply anchor posts and idea-building responses. The evidence available in this data set supports the idea of role functions which are undertaken on a rotating basis in the group. There also seems to be a critical change in the functioning of the groups during the final

discussion in terms of roles and function of posts. The longitudinal factor highlighted by Walther (1994) appears to be a critical one in studying the emergence of these relationships.

2. Agreement and conflict

Conflict management in small groups has been a heavily studied topic in face-to-face small groups as well as in organizations. This data set provides interesting information on the management of conflict in computer-mediated groups. While the topic of "flaming" is frequently mentioned in internet literature (see Walther, 1994) there was no evidence of insulting, hostile language in this data set, nor in the similar sample used by Owen-Cruise et al. (1994) The relative novelty of the medium, and the knowledge that the instructor was observing and grading the interaction may impede the use of flaming in this type of exercise. While it is possible that flames were sent directly to individuals without copying the instructor, it seems doubtful that the targets of flames would not have retaliated by publicly exposing the individual.

Although hostile conflict was absent from the data set, conflicting attitudes and ideas were plentiful. The questions which students were asked to address intentionally required students to consider conflicting opinions. There was an overwhelming amount of data to indicate that student's response to the conflict was to verbalize agreement. A significant number of posts began with "I agree with your point that..." or "We seem to agree on the point that..." What was interesting was the ensuing description was often NOT identical to the point articulated previously. Furthermore, there were a few instances of stated disagreement, after which the conclusion was invariably reached "we seem to agree." Agreement was always clearly articulated and often related personally by naming the other person in agreement. Disagreement, however, was often not labeled as disagreement, or if it was it was not directed personally. While this may be an example of a Minnesota norm for being nice, it also may provide insight to the ways individuals negotiate a group decision and agreement.

A more heated conflict which occurred in group three has been discussed elsewhere under the heading of humor and sarcasm. This use of humor to engage in heated disagreement may have resulted because members could no longer pretend to agree, simply

by stating that they did agree. By teasing or making fun of others' comments group three may have tried to diffuse the realization that there was disagreement.

3. Non-participants

An interesting phenomenon for email discussion groups are the presence of non-participants, or lurkers. While this is quite common in on-line discussions using bulletin boards or list-servs, the presence of non-participants in an instructional small group discussion may be problematic. On one hand, it is very easy for a group to ignore that non-participants exist if the group is able to maintain the conversation. In group three one member dropped out for the entirety of discussion two and was apparently not missed. In contrast, the non-participation of members in group one raised some animosity because the discussion was faltering due to lack of participation. It is difficult to know whether non-participants are lurking (reading but not responding) or if they are oblivious to the conversation for various reasons (no time, technology problems, etc.). There is some indication in this data set that even when technology problems and time constraints limit an individual's participation they still feel included in the conversation because they are able to read the messages. It is not clear, however, how other members of the group conceptualize non-participants as group members. Future research could explore how non-participation of members affects the group outcome as well as the individual experiences of the group. The fact that the instructor was lurking and not participating in these discussions could be contrasted with an active instructor to see how relationships change or develop in the discussion groups.

4. Relationships between computer-mediated and face-to-face interaction

A final interesting point to consider is how parallel interactions using computers and face-to-face media interact with each other. The fact that students came to class twice a week and interacted with each other on a face-to-face basis appears to have a positive effect on both types of interaction. Anecdotal classroom evidence suggests that students used face-to-face discussion opportunities to catch up on who had posted and find out more information on how to use email features. It was clear by comments such as, "Did you get my post?" and "I'll write you back tonight" that the visual reminder of the interaction was a motivating force for the email discussion. Furthermore, 35% of the posts were initiated in the hour

before or after class. It is possible that students saw each other in the computer lab and the possibility of an immediate response was motivating. There is some evidence of this in the text of groups one and two.

McCombs (1994) suggests that her classroom discussions are richer as a result of online discussion. While minimal classroom time was devoted to email topics, students did appear to be engaged when in-class discussion related to the on-going email discussion. There were also several instances where an interesting class discussion was continued through email.

It would be interesting to explore the impact that computer-mediated discussions have on classroom discussion and the degree to which students augment their online discussion with face-to-face contact.

To summarize, this data set has yielded a rich set of research areas which warrant further study. Communication strategies and relational strategies work together to make discussion groups constructive contributions to classroom learning. The twelve topics outlined here are offered to help email researchers isolate and study the important communication dynamics which occur in instructional group discussions via email.

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Appendix A
Assignment, as given to students

E-MAIL DISCUSSIONS 3 discussions at 20 points each

You will be assigned to e-mail discussion groups and given time to meet in class to get the names of others in your group. The purpose of the e-mail assignment is to allow people who are uncomfortable talking in class to participate in a group discussion. We will also analyze our interaction over the electronic mail for its cultural components. As a type of communication which does not have a nonverbal component, it is a useful thing to analyze. A final objective is to teach you how to effectively use this important medium.

The discussions will be graded for the group and the whole group will get the same grade. Each member of the group is expected to contribute at least two pieces of mail to the discussion. The group will be awarded up to 10 points based on the ideas which the group generates and up to 10 points for their ability to "interact" in e-mail. This means really conversing and not just each person writing their own answer to the questions. This means more questions get asked than answered and the group is able to come up with new questions. The group does not have to come up with a single answer to the questions posed. Instead, they only need to have a meaningful discussion and come up with some possible answers.

You are expected to log on to your e-mail account at least once a week. If you do not, the amount of mail messages which you will have to read and respond to will be too great and it will take you a long time. I recommend that you try and log on once a day or every second day during the discussion periods. You group does not have to discuss continuously for the entire two weeks and if you feel you have exhausted the topic you can stop before the last day the project was assigned. Please try not to prolong the discussions much over the allotted time period.

In the event that not all members of the group participate in the discussion, points may be awarded differently to the group members so as not to penalize those who do contribute.

Discussion Topics

Email Discussion 1 (20 points)

Nintendo and other electronic "beep beep" games have been enormously popular worldwide. What are the values that you think such games teach? Why do you think these games (and these values) are able to transcend cultural barriers the way they do?

Email Discussion 2 (20 points)

In the past five years three major international events have occurred which no-one thought would be possible: The Berlin wall was destroyed, the USSR was dismantled, and a peace accord was signed between the PLO and Israel. The forces involved in these issues are very complex. Speculate from a cultural perspective: Are there dynamics of cultural contact and/or cultural change which contributed to this? Is there hope for Northern Ireland? Bosnia? Why or why not? Do cultural explanations work to explain international events, in your opinion?

Email Discussion 3 (20 points)

What are the ethical considerations which we must make when we encourage intercultural encounters? As a group try and work out some ethical guidelines for people wanting to go to other cultures. Here are some questions to get you started:

a. Should we allow intercultural contact at all knowing what we know about how foreigners and foreign money, technology, etc. destroys the local culture and causes conflict?

b. If someone is determined to go to another country, do "we" have an obligation to prepare him/her for it knowing that it will probably change her/his identity and may cause the person difficulties?

c. Should we encourage increased globalization of industry, travel, politics, economics, etc. since it seems to lead to languages dying out and loss of local culture?

d. Do we have an obligation to share our technology with others or should we hoard medical and other breakthroughs until others discover it themselves so as not to destroy other's cultures?

QUICK AND DIRTY GUIDE TO USING EMAIL

DIRECTIONS:
We will have an introductory email session in the second week of class to introduce you to the system.

Getting on the machine

You can dial in to the mail machine in any computer lab. There is one in the basement of Folwell. There is also a lab in Nicholson Hall room 1 which only has computers for email where it may be easier to get on a machine. You can also dial in from your home if you have a modem. You should call the computer help line at 626-XXXX if you need help doing this (they keep office hours and may put you on hold for a while). At the prompt when you have turned on the computer you should type **XXXX.tc.umn.edu <enter>** to get to the computer which has the student mail accounts. If you have trouble ask the lab attendant.

When you get a prompt that says "login: " you should type in your user name. This is listed on the sheet of addresses I have passed out. Hit the enter key. Then you will see "password" Type in your id number <enter>. You should change your password when you log on. There will be an option to do this on the menu under Other options.

To find the email address for someone you know, you can look it up in the address book under the option Gopher. Every staff, student, and faculty member at the U of M has an account.

Select option 1 for Mail services.

Sending and Receiving Mail
To send and receive mail, choose the selection labeled that. There are many different programs which people can use for electronic mail. The program that is used on the student machine is called PINE. If you ever use email at another place, you probably will use some other program, but the ideas are very similar. PINE is easy to use because it uses menus and it shows the commands you might want to use on the bottom of the screen. The first screen you see is the "main menu".

One of the options is I--Mail Index. Type **I**
The messages that have been mailed to you will be listed. You will see who they are from and what the subject is. At the top you will see "folder: Inbox" Folders are used to organize your messages. They work just like paper file folders. You can put messages you receive in different folders to help you keep track of them better. You might keep all of the messages on one topic in one folder, or all messages from a group of people in a folder. You can move messages around into different folders any time. All of your new messages will appear in the "inbox" folder.

To read a message, use the cursor to move the highlighted bar to the message. Press <enter>. At the bottom of the screen you will always see all the possible commands you can use for this menu. Whenever you see the notation ^ it means that you should hold down the control key simultaneously with typing the next letter. For example, ^X means you should type control and X at the same time.

Distribution lists allow you to send a message to a whole group of people at once. It is like talking to all of the people at the same time, instead of sending an individual letter or memo to each of them. Or its like having a conference call on the telephone instead of having just two people talking. We will use a distribution list for this class. To participate in the discussion, you will send messages to the list.

(To go back to the main menu type M) At the main menu choose A--addresses. Type S to create a list. Type a nickname for the list (I use IC). Type a full name (I use Intercultural Comm. Group). Type in the list of addresses for the people in your group and put my address on the list as well. When you are done with all the names, press return at the prompt for the next name.

You could add other people to your address book. You might add an address for me individually. Instead of using S (create list) use A (add). Follow the prompts. Press M for main menu when you are done.

Now send the distribution list a message to let us know you have successfully logged on to your email and you are ready to start the first discussion topic. From the main menu select C for compose. Where it says TO: type the short nickname of your group list. When you hit the enter key, the computer should automatically change that short name to the list of people. If it doesn't list out all the people there may be a problem. CC: means do you want to send a copy to anyone not on the TO: list. For example, you may want to send yourself a copy to make sure that the memo went out. ATTACH: is if you want to send another file along with your message which is an advanced function, so just leave it blank. MEMO: is a brief notation to tell others what this message is about. Then when your cursor is below the MESSAGE line, you can type your message. When you are ready to send the message, type ^X or ctrl X. It will ask you if you want to send it, and if you answer Y it will send out your message to everyone to whom it is addressed. When you have received one or two other practice messages, you can begin to send out ideas on discussion topic one.

Every time you send a message, a copy is saved for you in a folder called Sent-messages. Each month the computer automatically rolls the sent-messages into another folder called Nov-1993-sent-mail or something like that. It may also ask you if you would like to delete your old sent messages monthly. It is a good idea to delete messages that you do not want to save so that your account does not exceed the allotted amount of space on the computer.

To Delete messages, at the main menu type I for index. In the index, move the cursor to the message you want to delete. Press D for delete. Keep doing this for each message you want to delete. When you exit PINE the messages will be deleted.

To save a message into another folder, go to the main menu, press I for index, move the cursor to the message you want to move, press S for save, enter the name you want to move the message to. If it doesn't exist it will ask you if you want to create it. To go back and read messages in different folders, type F for folders at the Main menu. Move the cursor to the folder you wish to open. Alternatively, you may press G in the index menu and it will open the index for a different folder. To do this you already have to know the name of the folder you want to open.

Getting out of PINE

Feel free to play around with PINE. If you have any questions, ask me or send a message to xxxx@xxx.tc.umn.edu

To get out of PINE type Q through several menus until you get back to the first prompt. You will be asked if you really want to delete any messages you have already deleted before it dumps them.

Reminders

When you reply to a message you are replying to everyone in the "TO:" list. So its not just me, even though the message might have come from me first. When you reply to a message, you have the choice of including the original message in YOUR message. Sometimes you will want to do this, but sometimes not.